

Interview Summary

Application No.

09/772,736

Applicant(s)

MEISEL, DAVID

Examiner

Jeffrey Donels

Art Unit

2837

All participants (applicant, applicant's representative, PTO personnel):

(1) Jeffrey Donels.

(3) _____.

(2) Doug Wathen.

(4) _____.

Date of Interview: 21 May 2003.

Type: a) ☐ Telephonic b) ☐ Video Conference

c) ☒ Personal [copy given to: 1) ☐ applicant 2) ☒ applicant's representative]

Exhibit shown or demonstration conducted: d) ☐ Yes e) ☒ No.

If Yes, brief description: _____.

Claim(s) discussed: 5 and 6.

Identification of prior art discussed: Brennan.

Agreement with respect to the claims f) ☐ was reached. g) ☐ was not reached. h) ☒ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: Proposed claim language was discussed in claim 5 that appear to overcome the prior art rejection. Further consideration will be made upon the filing of an amendment.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN ONE MONTH FROM THIS INTERVIEW DATE TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.


Examiner's signature, if required

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record

A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews

Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.

All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:

- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:

- 1) A brief description of the nature of any exhibit shown or any demonstration conducted,
- 2) an identification of the claims discussed,
- 3) an identification of the specific prior art discussed,
- 4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
- 5) a brief identification of the general thrust of the principal arguments presented to the examiner,
(The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
- 6) a general indication of any other pertinent matters discussed, and
- 7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

COPY

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Meisel

Serial No.: 09/772,736

Group Art Unit: 2837

Filed: January 30, 2001

Examiner: Jeffrey Donels

For: KEY ACTUATION SYSTEMS FOR KEYBOARD INSTRUMENTS

PROPOSED AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

In response to the Office Action mailed March 13, 2003, please amend the above-referenced application.

CLAIM AMENDMENTS

1. (Original) A key actuation system for a keyboard instrument of the type having a plurality of keys, each key having an upper surface and a lower surface and being pivotally supported above a key bed, each key further having a front end that is depressed by a player to play a note, the key bed extending under and spaced from the lower surface of the key, the actuation system comprising:

an underlever disposed in the space between the lower surface of the key and the key bed and between the front end of the key and the pivotal support, the underlever having a first end that is supported in a stationary position relative to the key bed, a second end that is movable towards and away from the key bed, and a midportion therebetween, the second end of the underlever being in mechanical communication with the key such that movement of the second end of the underlever towards the key bed causes the key to move as if depressed by a player;

an actuator in mechanical communication with the underlever and operable to move the second end of the underlever towards the key bed.

2. (Currently Amended) The key actuation system according to claim 1, wherein the actuator comprises a pull solenoid having a coil portion and a piston, the solenoid operative when the coil portion is energized to draw the piston into the coil portion, the solenoid mounted such that the coil portion is disposed below the midportion of the underlever, the piston being in mechanical communication with the midportion of the underlever such that when the coil portion of the solenoid is energized, the piston pulls the midportion of the underlever downwardly causing the second end of the underlever to move towards the key bed. -

3. (Currently Amended) The key actuation system according to claim 1, wherein the actuator comprises a push solenoid having a coil portion and a piston, the solenoid operative when the coil portion is energized to push the piston out of the coil portion, the solenoid mounted such that the coil portion is disposed above the midportion of the underlever, the piston being in mechanical communication with the midportion of the underlever such that when the coil portion of the solenoid is energized, the piston pushes the midportion of the underlever downwardly causing the second end of the underlever to move towards the key bed. -

4. (Currently Amended) The key actuation system according to claim 1, wherein the underlever is a flexible underlever that flexes when the actuator moves the underlever. -

5. (Currently Amended) An actuation system for a keyboard instrument of the type having a plurality of pivotally supported keys having front ends that are depressed by a player to play a note, the keyboard instrument further having a counterweight system comprising a counterweight that is separate from the keys, the counterweight being in mechanical communication with one of the keys such that depression of the front end of the key causes the counterweight to move in a first direction, the actuation system comprising:

an actuator operable to move the counterweight in the first direction. -

6. (Currently Amended) The actuator system according to claim 5, wherein the counterweight is pivotally supported and pivots when the key is depressed, the first direction being a rotational direction and the actuator being operable to pivot the counterweight in the first rotational direction. -

7. (Currently Amended) ~~The actuator system according to claim 5, wherein~~ An actuation system for a keyboard instrument of the type having a plurality of pivotally supported keys having front ends that are depressed by a player to play a note, the keyboard instrument further having a counterweight system comprising a counterweight that is in mechanical communication with one of the keys such that depression of the front end of the key causes the counterweight to move in a first direction, the actuation system comprising:

an actuator operable to move the counterweight in the first direction, the actuator ~~is~~ being a push solenoid having a coil portion and a piston, the actuator operable when the coil portion is energized to push the piston at least partially out of the coil portion, the solenoid being mounted such that the piston is in mechanical communication with part of the counterweight and is operable to push on the part of the counterweight when the coil portion is energized to cause the counterweight to move in the first direction. -

8. (Currently Amended) ~~The actuator system according to claim 5, wherein~~ An actuation system for a keyboard instrument of the type having a plurality of pivotally supported keys having front ends that are depressed by a player to play a note, the keyboard instrument further having a counterweight system comprising a counterweight that is in mechanical communication with one of the keys such that depression of the front end of the key causes the counterweight to move in a first direction, the actuation system comprising:

an actuator operable to move the counterweight in the first direction, the actuator is being a pull solenoid having a coil portion and a piston, the actuator operable when the coil portion is energized to draw the piston into the coil portion, the solenoid being mounted such that the piston is

in mechanical communication with part of the counterweight and is operable to pull on the part of the counterweight when the coil portion is energized to cause the counterweight to move in the first direction. -

9. (Currently Amended) ~~The actuator system according to claim 5, wherein~~ An actuation system for a keyboard instrument of the type having a plurality of pivotally supported keys having front ends that are depressed by a player to play a note, the keyboard instrument further having a counterweight system comprising a counterweight that is in mechanical communication with one of the keys such that depression of the front end of the key causes the counterweight to move in a first direction, the actuation system comprising:

an actuator operable to move the counterweight in the first direction, a portion of the counterweight ~~comprising~~ comprising a ferromagnetic material and the actuator ~~is being~~ operable to electromechanically move the ferromagnetic material to cause the counterweight to move in the first direction. -

10. (Currently Amended) A player keyboard instrument for producing notes and actuating the keys to simulate being played by an operator, the keyboard instrument comprising:

a key bed;

a plurality of keys, each key having an upper surface and a lower surface and being pivotally supported above the key bed, each key further having a front end that is depressed by a player to play a note, the key bed extending under and spaced from the lower surface of the key, each key having a post extending downwardly from the lower surface of the key towards the key bed, the post including a portion of ferromagnetic material;

a counterweight system comprising a plurality of counterweights, one of the counterweights being in mechanical communication with each of the keys such that depression of the front end of each key causes the corresponding counterweight to move in a first direction;

a plurality of actuator coils disposed in the space between the lower surface of the keys and the key bed, one of the actuator coils being disposed about each of the posts, each actuator coil operable to electromechanically move the ferromagnetic portion of the corresponding post downwardly so as to move the corresponding key. -

11. (Currently Amended) A key actuation system for a keyboard instrument of the type having a plurality of keys, each key being pivotally supported and having a front end that is depressed by a player to play a note, the actuation system comprising:

a plurality of actuators operable to move at least some of the plurality of keys, the plurality of actuators together comprising:

a block of ferromagnetic material with a plurality of bores defined therein,

a winding disposed in each of the bores, each of the windings having a hole defined therein, and

a piston at least partially disposed in each of the holes, each piston being in mechanical communication with one of the keys such that movement of the piston causes movement of the key;

wherein energizing one of the windings causes the corresponding piston to move relative to the winding, thereby moving one of the keys. -

12. (Currently Amended) The key actuation system according to claim 11, wherein each of the keys further has a rear end that moves upwardly when the front end is depressed, the actuation system further comprising a plurality of underlevers each having a movable end and a mounted end, the movable end being positioned under the rear end of one of the keys such that upward movement of the movable end causes the movable end to lift the rear end of the key upwardly, the underlevers providing the mechanical communication between the pistons and the keys. -

13. (Currently Amended) The key actuation system according to claim 12, wherein the block is positioned rearwardly of the rear ends of the keys and the underlevers are disposed above the block, the plurality of actuators being push solenoids such that energizing the windings causes the pistons to move upwardly out of the holes in the windings and push on the underlevers. -

14. (Currently Amended) The key actuation system according to claim 12, wherein the block is positioned rearwardly of the rear ends of the keys and the underlevers are disposed below the block, the plurality of actuators being pull solenoids such that energizing the windings causes the pistons to be drawn upwardly into the holes in the windings and to pull on the underlevers. -

15. (Currently Amended) The key actuation system according to claim 11, further comprising a plurality of underlevers each having a movable end and a mounted end, the movable end being positioned under the one of the keys between the front end of the key and the pivotal support, the movable end being in mechanical communication with the key such that downward

movement of the movable end causes the front end of the key to be moved downwardly, the underlevers providing the mechanical communication between the pistons and the keys. -

16. (Currently Amended) The key actuation system according to claim 15, wherein the block is positioned below the underlevers, the plurality of actuators being pull solenoids such that energizing the windings causes the pistons to be drawn downwardly into the holes in the windings and to pull down on the underlevers. -

17. (Currently Amended) The key actuation system according to claim 15, wherein the block is positioned below the keys and above the underlevers, the plurality of actuators being push solenoids such that energizing the windings causes the pistons to move downwardly out of the holes in the windings and to push down on the underlevers. -

18. (Currently Amended) A key actuation system for a keyboard instrument of the type having a key fulcrum pivotally supporting a plurality of keys, each key having a front end disposed forward of the fulcrum which is depressed by a player, and a rear end disposed rearward of the fulcrum that pivots upwardly when the front end is depressed, said system comprising:

a pivotal support;

a rocking lever arm supported by the support and having a lifting end on one side of the support in mechanical communication with the rear end of one of the keys and a piston end on the other side of the support, the piston end including a portion of ferromagnetic material; and

an actuator coil having a opening therein, the coil disposed such that the piston end of the lever arm is at least partially disposed in the opening, the actuator operable to electromechanically move the piston end of the lever arm. -

19. (Currently Amended) The actuation system according to claim 18, wherein the piston end of the rocking lever arm is generally blade shaped and the coil is generally rectangular with a generally rectangular opening therein. -

20. (Currently Amended) The actuation system according to claim 18, wherein the pivotal support is disposed rearward of the rear end of the key and the piston end of the lever arm is positioned rearward of the pivotal support. -

21. (Currently Amended) A key actuation system for a keyboard instrument of the type having a plurality of pivotally supported keys each having a front end which is to be depressed by a player to pivot the key, said system comprising:

a primary underlever having a mounted end and a free end that is movable in at least a first direction;

an actuator operable to move the primary underlever such that the free end of the primary underlever moves in the first direction; and

a secondary underlever having a mounted end and a free end that is movable in at least a second direction, the free end being in mechanical communication with one of the keys such that when the free end of the secondary underlever moves in the second direction, the key pivots as if

depressed by a player, the secondary underlever further having a midportion defined between the mounted and free ends;

the free end of the primary underlever being in mechanical communication with the midportion of the secondary underlever such that when the free end of the primary underlever moves in the first direction, the free end of the secondary underlever is moved in the second direction. -

22. (Currently Amended) A player keyboard instrument for producing notes and actuating the keys to simulate being played by an operator, the keyboard instrument comprising:

a plurality of pivotally supported keys, each key having an upper surface and a lower surface, each key further having a front end that is depressed by a player to play a note, each key having a post extending downwardly from the lower surface of the key, the post including a portion of ferromagnetic material;

a sensor operable to sense movement of the posts of each of the keys;

a sound reproduction system in communication with the sensor and operable to produce sound in response to movement of the posts; and

a plurality of actuator coils, one of the actuator coils being disposed about each of the posts, each actuator coil operable to electromechanically move the corresponding post downwardly so as to move the corresponding key. -

23. (Currently Amended) The keyboard instrument according to claim 22, wherein the sensor comprises a plurality of individual sensors. -

24. (Original) The keyboard instrument according to claim 22, wherein each of the posts includes a finger extending from a lower end thereof, the sensor being operable to sense movement of fingers.

25. (New) The actuator system according to claim 5, wherein the actuator is a push solenoid having a coil portion and a piston, the actuator operable when the coil portion is energized to push the piston at least partially out of the coil portion, the solenoid being mounted such that the piston is in mechanical communication with part of the counterweight and is operable to push on the part of the counterweight when the coil portion is energized to cause the counterweight to move in the first direction.

26. (New) The actuator system according to claim 5, wherein the actuator is a pull solenoid having a coil portion and a piston, the actuator operable when the coil portion is energized to draw the piston into the coil portion, the solenoid being mounted such that the piston is in mechanical communication with part of the counterweight and is operable to pull on the part of the counterweight when the coil portion is energized to cause the counterweight to move in the first direction.

27. (New) The actuator system according to claim 5, wherein a portion of the counterweight comprises a ferromagnetic material and the actuator is operable to electromechanically move the ferromagnetic material to cause the counterweight to move in the first direction.

REMARKS

This proposed amendment is being submitted for discussion purposes during an interview scheduled for Wednesday, May 21, 2003, at 5:00 p.m. Any questions should be directed to Applicant's below-signed representative.

Respectfully submitted,

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Dated: _____, 2003